

Laparoscopic Treatment of Splenic Cysts

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ABSTRACT

Presented here is a case report of laparoscopic fenestration of a symptomatic, nonparasitic splenic cyst. Technical aspects of the procedure are discussed along with a review of the literature. The laparoscopic approach to splenic cysts offers many advantages over traditional open procedures and may be the treatment of choice for this rare clinical problem.

Key Words: Splenic cyst, Laparoscopy.

INTRODUCTION

Nonparasitic splenic cysts remain a relatively rare clinical problem though the frequency with which they are seen may be increasing due to the increased use of ultrasound (US) and computed tomography (CT) scanning for diagnosing intraabdominal pathology. Although a significant number of patients will remain asymptomatic because their cysts are small, larger cysts are often symptomatic and may, on rare occasions, rupture, hemorrhage, or become infected. Nonoperative measures like aspiration often lead to cyst recurrence. Splenectomy, either partial or total, has been the treatment of choice. With the advent of advanced laparoscopic techniques, a more conservative surgical approach can be undertaken to treat nonparasitic splenic cysts.

CASE REPORT

A 27-year-old Caucasian male with no significant past medical or surgical history, presented with several months of left upper abdominal pain and early satiety. He underwent a CT scan that showed a 14 x 18-cm splenic cyst (**Figure 1**). The patient had no history of previous abdominal trauma. Serologic testing for *Echinococcus* was negative. A CT-guided aspiration was performed (2.5 liters of bloody fluid was removed) with resolution of his symptoms. Pathologic examination of the fluid revealed only blood and histiocytes. The patient's symptoms returned 2 years later and were identical to his previous symptoms. A 14-cm cyst was again seen on CT scan and surgical consultation was requested. On examination, a mass in the left upper abdomen was easily palpable and slightly tender.

A laparoscopic approach to this lesion was selected. With the patient in the prone position and under general anesthesia, initial peritoneal access was gained through a supraumbilical incision. Further trocars were placed in the subxiphoid region, the right subcostal, midclavicular line, and the left anterior axillary line at the level of the umbilicus. The cyst was identified and aspirated. Cultures of the fluid were requested. Fenestration of the cyst was then accomplished by excising the cyst wall to within 1 centimeter of the splenic rim. A variety of devices were used to resect the cyst wall, including

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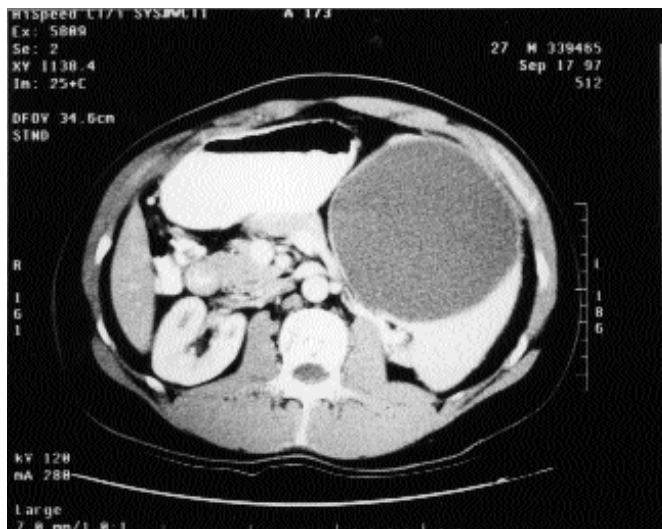


Figure 1. CT scan showing large splenic cyst.



Figure 2. CT scan 6 months postoperatively showing resolution of the cyst. The cyst cavity is filled with omentum.

endoscopic shears, Harmonic scalpel, and electrocautery. Because the cyst wall was quite thick, the shears proved to be the most useful. Hemostasis was obtained with electrocautery. A frozen section of the cyst wall revealed fibrous tissue and inflammation with no malignancy noted. When the cyst was completely fenestrated, a closed suction drain was placed in the cyst bed. Greater omentum was then placed over the cyst bed drain. Trocars were removed and closure was performed in the standard fashion.

The patient was started on clear liquids the night of surgery. The drain was removed on the second postoperative day, and the patient was discharged, symptom free. Pathologic examination of the specimen revealed fibrous tissue with chronic inflammation. No epithelial lining was visible. A follow-up CT scan at 6 months showed a residual 1.9-cm cyst, most likely representing a loculated fluid collection. The former cyst cavity was filled in with omentum (**Figure 2**).

DISCUSSION

Splenic cysts are typically classified as true cysts, either parasitic or nonparasitic, and pseudocysts. True cysts have an epithelial or mesothelial lining, and pseudocysts have no cellular lining, only a fibrous capsule. The vast majority of splenic cysts in the United States are pseudocysts resulting from blunt trauma.¹ Other causes include

infarction or infection. Often the inciting event cannot be recalled. Although a significant percentage of splenic cysts are asymptomatic, larger cysts may cause vague upper abdominal pain as a result of capsular distention or pressure on adjacent organs.² Major complications like hemorrhage into the cyst or peritonitis secondary to cyst rupture are rare.³ Diagnosis is most often made with ultrasound or computed tomography. Serologic testing to exclude hydatid disease is also recommended.

Treatment decisions are often based on the size of the cyst and related symptoms. Small, asymptomatic cysts are best followed with serial US or CT because spontaneous resolution of traumatic pseudocysts can occur. Though the risk of major complications is small, larger cysts and those that are symptomatic should be treated surgically. Less invasive procedures, such as aspiration, may be associated with cyst recurrence, as was seen in this case.⁴

Traditional surgical management of splenic cysts has been by either partial or total splenectomy. However, splenectomy places the patient at risk for the development of postsplenectomy sepsis.⁵ With the advent of advanced laparoscopic techniques and ongoing interest in splenic preservation, a more conservative surgical approach has been advocated. Salky⁶ reported the first laparoscopic treatment of a splenic cyst in 1985. The cyst was decompressed with a trocar and a window was cut in the cyst wall. This report generated little interest in this

technique until almost a decade later. Since the middle 1990s, numerous reports of laparoscopic treatment of splenic cysts have been published.^{2,3,5,7-20} The most common procedure by far has been fenestration of the splenic cyst followed by packing of the residual cavity with omentum. A silastic drainage catheter to drain the cyst bed has been frequently used.^{2,9,10,12,14,16} A variety of methods to resect the cyst wall have been described, including sharp dissection with electrocautery,^{2,9,12} Harmonic scalpel,^{14,18} and endoscopic staplers.^{10,13} Though not described in the reviewed case reports, a bipolar cautery device with a central mechanical cutting blade may also be used. Intraparenchymal traumatic pseudocysts may present more of a challenge than those located peripherally as they may not be readily visible. Operative strategy can be planned using laparoscopic ultrasound to identify the thinnest part of the cyst wall. Coupled with endoscopic stapling devices, bleeding can be greatly reduced.¹⁰ Conversion to an open procedure may be required when dense adhesions are encountered or the cyst is located

deep within the splenic parenchyma.⁹

Many of the case reports describing laparoscopic surgery for splenic cysts are shown in **Table 1**. The most common type of cyst was a pseudocyst. The average hospital stay was 3 days (1 to 8 days). Conversion was necessary in 9.5% (n = 2) of cases due to a deep intraparenchymal cyst in 1 case and extensive left upper quadrant adhesions in the other. Postoperative imaging studies (when documented) showed complete resolution of the cyst, with follow-up averaging 13.3 months (2 to 36 months). Small fluid collections, occasionally seen, may represent a small cyst remnant or loculated fluid within the omentum, if used to pack the cyst cavity.¹⁵

The laparoscopic management of splenic cysts has all of the advantages seen with other forms of laparoscopic surgery, including less pain, smaller incisions, shorter hospitalization, and earlier return to work. Complications secondary to large splenic cysts can be avoided with timely intervention.²¹ Fortunately, splenic cysts are seen

Table 1.
Case reports of laparoscopic surgery for splenic systs.

Reference	Age/Sex	Cyst Pathology	LOS	Follow-up (months)
Calligaris ²	62/M	pseudocyst	8	36
Fahel ³	30/F	pseudocyst	2	NA
Posta ⁷	17/F	pseudocyst	2	3
Targarona ⁸	28/F	pseudocyst	3	NA
Cala ^{9*}	32/F	pseudocyst	4	12
Feliciotti ¹⁰	51/M	pseudocyst	3	NA
Feliciotti ¹⁰	55/F	pseudocyst	5	NA
Heidenreich ¹²	24/F	true cyst	3	2
Sellers ¹³	34/F	true cyst	2	NA
Souka ¹⁵	25/F	pseudocyst	2	NA
Seshadri ¹⁶	15/F	true cyst	3	12
Linhares ¹⁷	33/F	pseudocyst	2	24
Linhares ¹⁷	24/F	pseudocyst	6	19
Sardi ¹⁸	16/M	true cyst	1	NA
Soares ¹⁹	26/F	true cyst	NA	5
van der Zee ²⁰	11/M	pseudocyst	2	NA
McLean ⁵	26/F	pseudocyst	2	NA
McLean ⁵	23/F	pseudocyst	2	NA
Comitalo	29/M	pseudocyst	2	7

*does not include 2 reported cases of conversion to open procedure.

infrequently, and it is therefore unlikely that a randomized controlled study comparing open with laparoscopic surgical techniques could be performed. However, based on the many case reports published to date, laparoscopic splenic cyst fenestration appears to be a safe and effective treatment for uncomplicated nonparasitic splenic cysts.

CONCLUSION

Laparoscopic fenestration of benign, nonparasitic splenic cysts offers an effective and minimally invasive alternative to the more traditional open procedures. Advantages of this approach include reduction in postoperative pain and length of hospitalization, improved cosmesis, and preservation of splenic function, thereby eliminating the risk of postsplenectomy pneumococcal sepsis.

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